

Claims

1.- A spatial light modulating unit provided with a light splitting unit for separating white light into a plurality of light colour components and a plurality of reflective spatial light modulators for modulating the light colour components, the spatial light modulating unit being enclosed by a substantially sealed chamber having walls; comprising: a cooling system for cooling each reflective spatial light modulator, the cooling system providing a heat path connection through a wall of the sealed chamber for cooling each reflective spatial light modulator, the cooling system being 5 heat conductively connected to each reflective spatial light modulator.

10 2.- The spatial light modulating unit according to claim 1, wherein each path of the light colour component to the reflective spatial light modulators is distal from the corresponding heat path connection.

15 3.- The spatial light modulating unit according to claim 1, wherein the heat path connection is a passive cooling system.

20 4.- The spatial light modulating unit according to claim 3, wherein the heat path connection is formed from heat conductive material.

25 5.- The spatial light modulating unit according to claim 1, further comprising a forced convective cooling means for cooling the light splitting unit inside the substantially sealed chamber.

6.- The spatial light modulating unit according to claim 1, further adapted to remove black light out of the substantially sealed chamber.

30 7.- The spatial light modulating unit according to claim 1, wherein a heatsink is connected to the heat path connection at the outside of the substantially sealed chamber.

8.- The spatial light modulating unit according to claim 1, wherein the heat path connection is an active cooling system.

9.- The spatial light modulating unit according to claim 8 wherein a Peltier junction cooling element is connected to the heat path connection at the outside of the substantially sealed chamber.

5 10.- The spatial light modulating unit according to claim 1, wherein each reflective spatial light modulator is a reflective LCD.

11.- The spatial light modulating unit according to claim 1, wherein each reflective spatial light modulator is a controllable mirror reflection device.

10 12.- The spatial light modulating unit according to claim 11, wherein the reflective spatial light modulator is a DMD.

15 13.- The spatial light modulating unit according to claim 1, wherein the light splitting unit is a prismatic device.

14.- The spatial light modulating unit according to claim 1, wherein the light splitting unit is located substantially centrally in the sealed chamber and the plurality of reflective spatial light modulator are arranged about the central light splitting unit 20 between the prismatic unit and a wall of the sealed chamber, each heat path connection transferring heat in a starting direction substantially the same as the direction of light incident on each reflective spatial light modulator.

15.- A projector apparatus having an spatial might modulating unit according 25 to claim 1.

16.- A method of cooling a projector apparatus having an spatial light modulating unit provided with a plurality of reflective spatial light modulators, and a light splitting unit for splitting white light into component colours, the spatial light modulating unit being enclosed by a substantially sealed chamber having walls, the method comprising the step of:
cooling each reflective spatial light modulator via a heat path connection through a wall of the sealed chamber, the heat path connection being heat conductively connected to each reflective spatial light modulator.

17.- The method according to claim 16, wherein the heat path connection is a passive cooling system.

18.- The method according to claim 16, further comprising the step of forced
5 convective cooling the light splitting unit inside the substantially sealed chamber.

19.- The method according to claim 16, further comprising the step of removing black light out of the substantially sealed chamber.

10 20.- The method according to claim 16, wherein the heat path connection is an active cooling system.